



# BREWING UP SOME STEAM

## MARS HELICOPTER

In July 2020, NASA's Perseverance Mars rover launched, carrying the first helicopter to the surface of Mars! In this experiment, you will build a paper helicopter. Like NASA engineers, try out different versions and experiment with the design to see what works best.

### Materials you Will Need:

- Mars helicopter template
- scissors
- pencil
- paper to make more

### DIRECTIONS

See the instructional video (by NASA):  
<https://youtu.be/HrKRWsrZuYc>



1. Cut along the dashed lines of the helicopter template.

2. Fold propeller blades, A and B, in opposite directions along the solid lines. The X and Y panels fold towards the center, and Z is folded upward to give the body rigidity and stability.



3. Do a test flight: Stand up, hold the helicopter by its body, and raise it as high as you can and drop it. What do you observe? Drop it from a higher spot. How does it change?

## *Mars Helicopter (cont.)*

4) Experiment: Try and figure out how to make your blades turn faster or slower. Try and figure out how to make the blades turn in the opposite direction.

### **Take this further:**

What happened when you made changes to the design of your helicopter?

#### **Try this:**

- make another helicopter that is different from your first
- use different paper
- make another fold on the bottom of the design
- change the size of your helicopter- how big can you make one that still works? How small?
- change the size of the blades
- test your designs from different heights

#### **What is happening when a helicopter flies?**

Lift is a force that is generated when the slightly angled moving blades of the helicopter meet up with air particles. This increases the air pressure on the bottom of the blades. The increased air pressure forces the blades and the entire helicopter up into the air.

